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ABSTRACT

This project, coordinated by the Center for Innovation in Teacher Education, Indiana University, aims to improve the performance of methods instructors and teachers who supervise student teachers, to train teaching associates as methods instructors, to increase the training skills of advanced graduate students, and to increase the interdependence of school and university programs. Academic experience is provided by workshops and seminars, with practical experience as teacher trainers in four elementary schools in the Bloomington Metropolitan School District. The project is divided into two parts, the first dealing with praxiological and clinical teacher trainers and providing each group of trainees (methods instructors, elementary school teachers, undergraduates, and other university and school personnel) with opportunities to increase their skills through an integrated program of teacher training and elementary school instruction. The second part seeks to update the training of teachers of mathematics by introducing topics of current interest, including differential geometry, topology, algebraic geometry, etc., and to focus on three groups of teacher trainees--mathematics professors and teaching associates in the College of Arts and Sciences, methods professors and teaching associates in the School of Education, and supervising teachers in the schools. [Not available in hard copy due to marginal legibility of original document.] (MBM)

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Indiana's Pilot Program for Training Teacher Trainers

The School of Education and the College of Arts and Sciences at Indiana University and the Bloomington (Indiana) Metropolitan School District have been awarded a contract by the U.S. Office of Education to initiate a pilot program for the training of teacher trainers (TTT). The pilot program covers a period of approximately thirteen months from June 1, 1969 to June 30, 1970.

The initial program has two components. The first provides an integrated training experience for two groups of teacher trainers - (1) methods instructors and two different groups of graduate students in the School of Education and (2) supervising teachers in the public schools. The training experience is interrelated with a program of undergraduate instruction to permit the practical application of skills and concepts acquired in the academic program. The objectives of this component are (1) to improve the performance of methods instructors, (2) to train teaching associates as methods instructors, (3) to improve the performance of teachers who supervise student teachers, (4) to increase the teacher training skills of advanced graduate students, and (5) to increase the interdependence of school and university programs.

These objectives will be achieved through a combination of academic and practical experiences. A variety of workshops and seminar experiences will be held during the summer of 1969 and the 1969-70 academic year. Four elementary schools will serve as training laboratories for the teacher trainers. Opportunities will be provided for each group of trainees to increase their skills through the operation of an integrated program of teacher training and elementary school instruction. If physical facilities permit, methods instruction and student teaching will be offered concurrently in the same schools.

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The second component of the TTT program involves geometry professors in the training of students who are or will be teaching geometry themselves at the elementary, secondary, and college levels. Instructors in mathematics methods will also be involved to insure an appropriate degree of articulation between instruction in the academic discipline and the professional methods sequence. An attempt will be made to have the professor use ideas and methods that the student can later relate to his own future teaching experience. In addition, an effort will be made to restructure the traditional sequence of undergraduate courses in order to bring in more current topics in geometry.

The TTT focus will be brought about by updating three groups of teacher trainers - mathematics professors and teaching associates in the College of Arts and Sciences, secondary methods professors and teaching associates in the School of Education and supervising teachers in the schools. Each of these groups will be involved in an integrated work and learn experience. In other words, the actual work of revising the program in geometry and a seminar to be carried on during the process will enable each of these groups to be "trained" by the other. The mathematicians will take the lead in updating the subject matter knowledge of the other groups. The methods professors and teachers will help the mathematics professors acquire greater knowledge of the teaching-learning process in elementary and secondary schools.

The Center for Innovation in Teacher Education, a facility established at Indiana University in January of 1969, is the central coordinating agency for the project. It will encourage intercommunication between the two components and between the TTT project and other projects both at Indiana University and elsewhere. For more information, please contact The Center for Innovation in Teacher Education, Suite 109, School of Education, Indiana University, Bloomington, Indiana 47401, or call 812 337-3468.

Gerald R. Smith, Project Director
April 18, 1969

Plan of Operation

Indiana TTT Task Force

The plan of operation which is described in this document is based upon a proposal submitted to the U. S. Office of Education in the late spring of 1968 under the Educational Professions Development Act. That proposal identified three major problem areas in teacher education to which a program of training teacher trainers needed to be related. These three areas are: 1.) the substantive training of teachers which takes place largely in Colleges of Arts and Sciences, 2) the praxiological training of teachers which takes place in Schools of Education, and 3) the clinical training of teachers which takes place in the public schools.

The problem of substantive training is that the courses usually are organized and presented through structures that make sense to the disciplines involved. The structures may take the form of the historical development of knowledge, its logical relationships, its methodological characteristics, or its research findings, but rarely are they designed explicitly in a form which is appropriate for those who will be teaching them to others. While this situation is generally true, it is a particular problem to prospective teachers since it prevents them from learning ways of fostering an understanding of knowledge when they become teachers.

Another problem related to substantive instruction is that the typical teaching associate lacks knowledge about and experience in the teaching act - that is, he has under developed pedagogical skills. He is hard pressed, for example, to teach his material in a psychological order which might facilitate learning; to take account of the individual needs

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and differences represented in his class; or to use effective measurement and evaluation techniques. He is inclined to make excessive use of the lecture method and in some instances does not have an alternative instructional strategy to fall back upon even if it is apparent that what he is doing is not achieving the result that he desires. Since a large percentage of these graduate students in many departments of the College of Arts and Sciences will end up teaching in college classrooms, the impact of their poor instruction extends beyond their tenure as teaching associates. Similar problems exist in the School of Education where the prospective teacher receives his praxiological training. In many cases, professional educationists, particularly methods instructors, are themselves former practitioners who are assumed to be knowledgeable about the art of teaching. Their instruction is often ad hoc, heavily dependent upon the rules of thumb or other operational guides which worked for them in the subject or at the grade level they happened to have taught. They are not students of practice - that is praxiologists who are knowledgeable about the process of teaching because they have studied it systematically as well as having practiced it. In many cases, they are out of touch with the real world of education at the elementary and secondary level.

A third set of problems is found in the clinical setting where the teacher in training comes into contact with those who supervise his student teaching experience, usually an advanced graduate student who is the field supervisor for a number of trainees and a classroom teacher in whose room the trainee is serving his "apprenticeship." The college supervisor, because of the number of persons he is required to supervise

and their geographical distribution, is severely constrained by the lack of time available to supervise the trainee. While the supervising teacher is in greater contact with the student over a period of time, she is carrying this responsibility over and above her regular instructional load and typically has little training in supervisory techniques. She also feels little responsibility for an effective program of supervision since this is generally thought to be the problem of the university.

The pilot program described in this plan of operation has two components, one concerned with the teacher trainers who provide the substantive training for prospective teachers and the other focused on the training needs of praxiological and clinical teacher trainers through an integrated program of instruction and practice. The remainder of this plan describes the objectives and procedures to be carried out in each of these program areas, beginning with the latter.

Pilot Program I

Praxiological and Clinical Teacher Trainers

This program provides an integrated training experience for two groups of teacher trainers - methods instructors and two different groups of graduate students in the School of Education and supervising teachers in the public schools. It is interrelated with a program of undergraduate instruction to permit the practical application of skills and concepts acquired in the academic program. Also involved are other personnel such as principals, a specialist in supervision, and some consultants.

Program I Objectives

1. To improve the performance of methods instructors,

   a. by providing opportunities for them to test their ideas in actual school settings.
   b. by providing training in the role of change agent.

2. To train teaching associates as methods instructors,

   a. by permitting them to work with methods instructors in offering methods instruction to undergraduates.
   b. by giving them opportunities to interact with teachers in actual school settings.
   c. by having them substitute for teachers on some occasions.

3. To improve the performance of teachers who supervise student teachers.

   a. by giving them opportunities to participate in methods instruction.
   b. by providing training in supervisory techniques.
   c. by providing opportunities for them to practice supervisory techniques under the guidance of a specialist in these techniques.

4. To increase the teacher training skills of advanced graduate students,

   a. by providing opportunities for them to supervise undergraduate students who will be working with elementary students.
   b. by providing supervisory training for them.
   c. by greater involvement in the teacher training program.

5. To increase the understanding of and participation in teacher training among individuals not usually associated with it.

6. To increase the interdependence of school and university programs.

Program I Procedures

The objectives for this program will be achieved through a combination of academic and practical experience on the various groups of teacher trainers. The academic experience will consist of a two-week workshop in the summer of 1969 and a series of seminars to be held during the 1969-70 academic year. All of the participants will obtain the practical experience they need as teacher trainers in four elementary schools[1] in the Bloomington Metropolitan

[1]Preliminary explorations have begun with seven elementary schools and the final decision will be made by April 15. Among the factors that must be considered, are teacher and principal interest, adequacy of facilities, availability of personnel for workshops, need, and similar items.

School District. Since the academic experience will be related very closely to the opportunities for direct application in the schools, it might be useful to begin with a detailed description of that experience before discussing the academic work.

The four elementary schools will serve as training laboratories for the teacher trainers providing opportunities for each group of trainees to increase their skills through the operation of an integrated program of teacher training and elementary school instruction. If physical facilities permit, language arts methods will be offered in one school, science methods in another, social studies methods in a third, and mathematics methods in the fourth. The student teaching experience will be offered concurrently in the same schools. The same group of undergraduate students will remain in the program for the entire academic year. Thus, the undergraduate program and the instructional program of the elementary schools serve as vehicles for the training of all of the groups of teacher trainers.

The methods instructors, with the help of several teachers, will plan and implement the methods course for thirty undergraduate students each semester. They will make use of the elementary classrooms for observation and participation experiences and provide demonstration lessons with elementary students. These lessons will be video taped for future use with undergraduates and teachers. They will provide college teaching experiences for four graduate students who will be assisting them in the methods courses. The graduate students or teaching associates, as they are called, will offer methods instruction to new groups of under-

graduates in the second semester under the supervision of the methods instructors. The teaching associates will also substitute for elementary teachers during the first semester so that the teachers can participate in the offering of methods instruction and receive inservice training.

The methods instructor also provides in-service training for the elementary teachers. Each instructor will use the subject matter he is familiar with (language arts, for example) to upgrade the supervisory skills of the teacher. The teacher will practice the use of these skills with undergraduate students who will be demonstrating their teaching skills with elementary children as part of their methods instruction.

In some subject areas, the methods instructor will supervise graduate students who are taking an advanced internship in those areas. The interns will work directly with undergraduates who in turn will be providing experiences to elementary pupils on an individual or small-group basis. For example, interns who are training to be reading specialists will supervise undergraduates in the conduct of a testing and tutoring experience with elementary pupils. Such an opportunity serves both the subject matter needs of the graduate students and introduces them to their role as teacher trainers. It also provides for specialized needs of individual pupils.

While the discussion has focused on the role of the methods instructor as trainers of teacher trainers - i.e., supervising teachers, graduate students as methods instructor, and graduate interns - it is also important to note their role in program development. In this role, they will assist the school in which they are working to develop a "model" program in language arts, science, mathematics, or social studies.

The elementary school teachers will assist the I.U. faculty in the methods instruction. Such assistance will take a number of forms. First, teachers will be actively involved in the planning of the methods course. Second, they will be given opportunities to participate directly in the methods classes through lectures, demonstrations, reactions to the presentations of others, etc. Finally, their classrooms will be used by the undergraduates in carrying out limited instructional assignments. The teacher will review such assignments before they are carried out and offer suggestions to the student. They will also observe the lesson and provide feedback to the student. In other words, their role will complement and supplement that of the methods instructor.

The practical experience which the undergraduate receives during methods instruction will establish a foundation for the more extensive experience of student teaching which takes place first, during four weeks of half-day sessions and later, for six weeks of full-day sessions in the same schools. During these periods, the teacher will work more closely and more regularly with the one or two students in his classroom. During the same period, the methods instructor provides feedback on the teacher's supervisory behavior.

Other university and school personnel will have roles to play either as trainers, trainees, or both. A program of exchange professorships will be established so that faculty not involved in the TTT program can participate for periods varying from a day to a week, depending upon the purpose. Professors from both the School of Education and the College of Arts and Sciences may be represented and will be drawn from Indiana University and possibly other campuses. One obvious illustration of what will be done

is to have two methods professors, one in the TTT program and one in regular methods change places for a day or a week. Similar exchanges might be established between other institute programs such as those in guidance and counseling and in instructional services (audio-visual specialists.)

Another obvious group to be involved are the principals of the four schools. It is planned that they will participate in the general planning for the program and will meet with the methods instructors and teachers on a regular basis to discuss the problems involved in implementing the program.

A specialist in supervision, not as yet mentioned, will play a vital role in the implementation of this project. He will move among the four schools working directly with the teachers, the methods instructors, and the two groups of graduate students to improve their supervisory skills. Two techniques will be employed. First, the consultant will make use of video-tape equipment to record the supervisory behaviors of these persons. A replay of the tape will enable him to provide feedback to individuals on an individual and group basis. The second technique involves the use of a variety of instruments, such as Flanders' Interaction Analysis Schedule. The consultant will help the participants to acquire skill in the use and interpretation of such instruments and in the employment of them with those they supervise.

The budget does not permit the deployment of a full faculty member in this position. Instead, an advanced graduate student with considerable experience will be used. He will probably be selected from the guidance and counseling program since that program, at Indiana at least, places a considerable emphasis on supervisory behavior along with the usual

emphasis on group process, the change process, and human behavior. This person will be asked to sharpen his skills through two programs at Indiana University in the summer of 1969. One is a workshop in supervison conducted by professor DeWayne Kurpius of the guidance and counseling program. The other is a workshop on instruments for observing pupil-teacher interaction sponsored by the Association for Student Teaching.

It is also hoped that an evaluation specialist may be able to participate by gathering data and aiding various people to interpret it accurately. The extent to which this is feasible will depend upon how successful we are at obtaining additional funds since the current budget request does not provide for this purpose in any but a very limited way.

Participants

Figure I depicts the number of participants involved and the manner of their involvement. In most instances, the participants are serving in the dual roles of trainer and trainee. Their major responsibility as teacher trainers is indicated in the right hand column. The numbers are minimum figures that may be exceeded in many cases.

Figure I

Chart of Participants

Program I

Participants	Minimum Number	Type of Participation Trainer	Trainee	Major Responsibility
Teachers	40	X	X	Undergraduate supervision and methods instruction.
Principals	4	X	X	General coordination.
Methods Professors	4	X	X	Methods instruction; in-service development of teachers.
Teaching Associates	4	X	X	Methods instruction.
Graduate Interns	8	X	X	Undergraduate supervision.
Specialist in Supervision	1	X	X	Consultant help to all supervisc
Undergraduates	60		X	None
Others	10	X		Varied
Total	131			

Academic Training

A total of five workshops, seminars, and other programs will be used to provide the academic training for the several groups of participants. These are listed below together with a brief statement of purpose and the participants to be involved.

Intersession Program (June 1969)

This session will provide a general orientation to the program for the participants and delineate the roles that each group will assume during the project. The participants will be given practice in dealing with problems similar to those that may arise during the project. Role playing, confrontation, and group process techniques will be used. Certain parts of the program will also be carried out through sub-groups. For example, the methods persons will have an opportunity to meet with the principal and teachers in the school they will be working in to explain their approach to the subject matter and their philosophy of methods instruction. Teachers and the principal will have a chance to reflect upon their own methods training and to offer suggestions for improvement. There will be plenty of opportunities for group discussion. Participants will include the methods instructors, teaching associates, graduate student specialists, principals, and a minimum of thirty-two (32) out of forty-eight (48) participating teachers.

Orientation Seminar for Undergraduates (September 1969; one week)

The purpose of this seminar will be to orient the undergraduate students to the program of methods instruction and field experience (student teaching) which is to take place in the schools. The program will be described and students will be given an opportunity to ask questions about the roles of the various participants. Some teachers and the school principals will participate in this

program with the methods instructors. No federal funds have been budgeted for this seminar.

Topical Seminars (October 1969 - May 1970; one hour per week)

The topical seminars will be carried out, for the most part in each of the four schools involved. The participants may vary from session to session but it is expected that all of the groups will be represented at one time or another with the methods persons and teachers carrying the major responsibility for participation. As the designation for these seminars suggests, they will be topical in nature dealing with subjects that appear to be of greatest interest to the participants. This means that in some instances, the sessions will focus on problems that have emerged in the conduct of the program and in other instances on subject matter questions, supervisory techniques, or ideas for program improvement. On special occasions consultant lecturers may be brought in to speak to participants from all four schools in a large-group session.

Principals' Workshop (October 1969 - May 1970; once each month)

Each month the director, methods instructors, and specialist in supervision will meet with the four principals to discuss problems in the coordination of the program. It will be the responsibility of this group to develop general guidelines for the operation of the program. It will also focus on the principal's role in promoting innovations and on the process of communication. Consultants may be used for specialized purposes.

Integrative Seminar for all participants (May 1970; one day)

This one-day seminar provides an opportunity for representatives from all of the participating groups to assess the strengths and weaknesses of the program and to offer suggestions for its modification.

Integrative Seminar for Undergraduates (May 1970; one week)

This seminar, with participation from methods instructors and some teachers, will provide an opportunity for undergraduates to share experiences, evaluate the program, and assimilate the variety of learnings that have taken place, both academic and experiential.

Program II

Training of Substantive Trainers (Geometry Project)

The program for training teachers in geometry at most colleges and universities has remained unchanged for decades while dramatic changes have taken place in the teaching of mathematics in the schools. Geometry has now become an important part of the elementary school mathematics curriculum, and it has been integrated with arithmetic to show the interrelations between the two. In many colleges prospective elementary school teachers do not study any geometry since the entire program is devoted to a short review of arithmetic. At Indiana University the pre-service elementary school teacher takes five hours of arithmetic and three hours of geometry in the Mathematics Department and three hours of methods in the School of Education.

Planned for next year is a new program in which the arithmetic and geometry are integrated into an eight hour sequence. This is also to be

coordinated with the methods course. It is necessary to plan some additional units for the course which are not in the usual textbooks for elementary school teachers. These are to broaden the intuitive knowledge that the teachers will have of geometry and give them more perspective in things they can relate to their classroom teaching. Some of the newer concepts introduced into this school program such as symmetry, transformations, elementary topological notions, convexity, vectors, etc. will be incorporated into the course. Materials will be needed to make the teaching of these ideas more effective in the college classroom. The professor in the college classroom should use pedagogical ideas and methods that the student teacher can relate to his or her future school classroom. It is hoped to involve the student more in the educational process by having him develop many of the ideas through small group discussions and experiments. It is planned that audiovisual materials, models, cut-outs, and so forth will be prepared next year to make the course a more meaningful experience to the pre-service teacher.

The pre-service courses in geometry for secondary teachers are in an even more archaic state in most universities. The most common courses are advanced Euclidean geometry, non-Euclidean geometry and projective geometry. On the other hand, the topics in geometry that are of current interest to mathematicians are differential geometry, topology, algebraic geometry, convexity, etc. At Indiana University a special course in intuitive topology was introduced a few years ago which has turned out to be a very popular course both for the professors teaching it and the pre-service teachers taking it. This indicates that the traditional courses should be restructured so as to bring in the more current topics in geometry. Program I of this project proposes to set up four semesters of geometry which will give

a meaningful survey with sufficient depth to prepare the secondary school teacher to give her future pupils an idea of what geometry is today. What is needed is a modernized version of Hilbert and Cohn-Vassen's book Intuitive Geometry and some chapters in Courant and Robbins' What is Mathematics treating the topics in greater depth. The new materials should still give insight into the structures of Euclidean and non-Euclidean geometries, affine and projective geometries but should also include such topics as differential geometry, algebraic geometry, topology, convexity, etc. Materials are being prepared at such places as the Geometry Project at the University of Minnesota and some materials are available from such countries as Denmark and the Soviet Union. The plan is to study these and use them whenever they are appropriate. If such a program is set up, it will be in the same spirit as the very popular undergraduate modern algebra course which gives a survey of the different topics that make up algebra. It is hoped that the introduction of a meaningful program of geometry will attract more students into these courses and give rise to a revival of interest in geometry at the undergraduate level.

A new program has been introduced to train elementary school specialists in mathematics. Those with adequate high school preparation in mathematics can take a four semester sequence of courses which include finite mathematics, a brief survey of calculus, foundations of the number system, and geometry. This course in geometry now consists of the foundations of Euclidean geometry, but a more imaginative course should be worked out for these people incorporating some of the features pointed out above for both the elementary and secondary programs.

The TTT focus will be brought about by updating three groups of teacher trainers - mathematics professors and teaching associates in the

College of Arts and Sciences, methods professors and teaching associates in the School of Education and supervising teachers in the schools. Each of these groups will be involved in an integrated work and learn experience. In other words, the actual work of revising the program in geometry and a seminar to be carried on during the process will enable each of these groups to be "trained" by the other. The mathematicians will take the lead in updating the subject matter knowledge of the other groups. The methods professors and teachers will help the mathematics professors acquire greater knowledge of the teaching-learning process in elementary and secondary schools. The work and the seminar will continue concurrently during the entire year.

The number who are actually engaged in the revision of the geometry program will be fairly small. Significant numbers of teacher trainers will be involved after the material is completed. In other words, at least a year of preliminary work will be required before the second round of training can begin. When the new materials are ready, they will be used initially with teaching associates in the College of Arts and Sciences to better prepare them to teach the lower level courses for freshmen and sophomores. A similar program will be employed with teaching associates in mathematics methods in the School of Education. Finally, supervising teachers, both elementary and secondary, will be trained in the use of the new material so that they can be more effective in their field work with undergraduate students. If this "new" geometry catches on, a large number of summer and academic institutes would have to be established to retrain college and school personnel (a third round of training). The second round of training is not programmed in the budget request for this project. Since it could not take place until after the revision of the course structure has been completed and new materials are available.

RESPONSIBILITIES OF TEACHER TRAINERS

General Personnel

1. Director - Overall coordination of two programs.

Program I Personnel

1. Methods professors - Instruction of teachers in four schools - one for each methods area of language arts, math, social studies, and science - to serve as supervisors of field experience, including student teaching, for undergraduates. Instructors of graduate student interns to serve as supervisors for limited aspects of undergraduate's field experience. Instruction of another group of graduate students to serve as teaching associates in methods during second semester.
2. Teaching associates - Four graduate students, one in each methods area to provide methods instruction during second semester (paid for during second semester with I.U. funds).
3. Teachers - Twelve teachers in each of four schools provide supervision of field experience for undergraduate students. Assist in planning and conduct of methods classes.
4. Specialist in supervision - Instructs methods professors, teachers, and graduate students in supervisory techniques such as the use of instructional analysis techniques, the use of video-tape equipment as a feedback tool, etc.

Program II

1. Professor of mathematics - Provides instruction in new geometry to methods instructor and to three elementary and three secondary teachers through academic year seminar.
2. Methods instructor - Primarily a trainee but provides pedagogical inputs to seminar.
3. Teachers - Primarily trainees but provides practical inputs to discussion of new geometry and its implications for supervising teachers.

KEY PROJECT PERSONNEL*

Project Director	Gerald R. Smith Director, Center for Innovation in Teacher Education
Program I Coordinator	Ruth Gallant Associate Professor of Education
Methods Instructors Language Arts	Larry A. Harris Assistant Professor
Science	Allan Kondo Assistant Professor
Math	Edward G. Buffie Associate Professor
Social Studies	Dorothy J. Skeel Assistant Professor
Other Personnel	Undesignated
Program II Coordinator	Arlo Schurle Assistant Professor of Mathematics
Methods Instructor	Undesignated
Teachers	Undesignated